(a) whether tine scientists woiking in various Regional Research Laboratories in the country a e transferred from one laboratory to smother;

(b) if so, what are the guidelines in this regard; and

(c) if not, what are the reasons therefor?

THE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY (PROF. M. G. K. MENON); (a) to (?) A Statement is laid on the Table of the House.

Statement

(a) According to the conditions of service, CSIR Scientists are liable to be transferred any where in India. However, since the scientists are recruited by the individual Laboratories for undertaking R&D activities in the respective specialised areas, normally they are not transferred from on3 Laboratory to another. These considerations inter-alia, apply to the Regional Research Laboratories.

(b) and (c) In speeiiic cases involving public interest, exigencies of service as well as on requests by individual scientists, inter-laboratory transfers of scientist? are effected on merits.

DR. YELAMANCHILI SIVAJI:... I want to know ho»v many applications are pending... *(Interruptions)*

PROF. M. G. K. MENON:... (Interruptions)...

DR. YELAMANCHILI SIVAJI:... From one laboratory to another...

PROF. M. G. K. MENON:... (Interruptions)

Now centres for research in space science

*286. SHRI KAMAL MORARKA: Will the PRIME MINISTER be oleased to state:

(a) whether any new centres have been set up for research in the field of space sciennce during the last six months;

(b) whether Government propose to launch; 50me pilot projec!s in this regard; and

(c) if so, what are the details there of?

THE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY (PROF. M. G. K. MENON): (a) to (c) A statement is laid on the table of Rajya Sabha.

Statement

(a) to (c) A new Centre for carrying out detailed investigations in the middle atmosphere [Mesosphere, Stratosphere and Troposphere (MST)] usng highly sophisticated MST Radar Facility is in the process of being set up at Tirupati. The first stage of this Project, i. e. installation of the Stratosphere and Troposphere 'ST> mode of the radar is under testing and the total facility namely the full MSI radar is expected to be completed by the year 1991.

In addition the following are the existing space research units, projects and centres in the country:

1. Vikram Sarabhai Space Centre (VSSC) located at Thumba near Tri vandrum is the main Centre for re-,. search & development in rocket & aunch vehicle technology. VSSC has exten sion centres at Valiamala housing maior facilities of the Polar Satellite Launch Vehicle (PSLV) project; and at Vatti-yoorkavu for the development of re inforced plastics & composites. VSSC also supports scientific experiments to foe carried out from the Thumba Equatorial Rocket Launching Station (TERLS), using sounding rockets of different types.

2. The Liquid Propulsion System Centre (LPSC) located at Valiamala in Kerala, Mahendragiri in Tamil Nadu and Bangalore, is responsible for the R&D in liquid propulsion system? both for launch vehicles and satellites.

3. Space Applications Centre (SAC) at Ahmedabad is primarily responsib'e

for the R&D work to demonstrate the "practical applications of space technology in the areas of satellite communications, remote sensing of earth's resources, space meteorology & satellite geodesy. SAC is also responsible for the development of application payloads for remote sensing, meteorological an"! communication satellites being deve-loped|launched by ISRO.

4. ISRO Stateliteat Centre (ISAC) at Bangalore is the leading Centre for design, development, fabrication & testing of all statelites of ISRO ISAc has currently undertaken three satellite pro-jecss namlly Indian Rmote Sensing Satellite (IRS), Stretched Rohini Satellite System (SROSS) and TNSAT-II Test Spacecraft.

5. SHAR Centre situated at Srihari kota in Andhra Pradesh is the main launch pads, control tower, telemetry and large sounding rockets. The Centre has a Launch complex consisting of launch pads, control tower, telemetry, telecommand and tracking facilities. A facility for launching meteorological rockets from Balasore in Orissa is also maintained & operated by SHAR.

6. ISRO Telemetry Tracking and Command Network (ISTRAC) with its headquarters at Bangalore operates a network of ground stations to provide tracking, telemetry & command (TTC) supnort for the launch vehicle and satellite missions of ISRO. This net work comprises of TTC stations at Sriharikota, Bangalore, Trivandrum, Lucknow and Car Nicobar. As S-nand receive only station has been set-up at Mauritius. ISTRAC also operates a Satellite Tracking & Ranging Station (STARS) with optical & laser systems at Kavalur in Tamil Nadu.

7. INSAT-I Space Segment Project Office (INSAT-1 SSPO) at Bangalore carries out the responsibilities of DOS for the implementation & operation of the INSAT-1 Space Segment using the INSAT-1 Master Control Facility (MCF) at Hassan in Karnataka.

8. National Remote Sensing Agency **(NRSA)** at Hyderabad, an autonomous inistitution supported by DOS, has data reception facilities for IRS, LAND-SAT SPOT & NOAA satellites at Shad-nagar, near Hyderabad and extensive facilities for carrying out detailed processing and dissemination of remote sensing data received from satellites & aircraft.

9. DOS is the nodal agency for Na tional Natural Resources Management System (NNRMS) in which various Central Ministrieis|Agetneies & State| Union Territory Governments are participating. DOS is responsible initially to manage a group of Regional Remote Sensing Service Centres (RRSSCs) established at Dehra Dun, Jodhpur, Nagpur, Kharagpur and Bangalore to cater to the needs of different geographic regions.

10. Physical Research Laboratory (PRL) at Ahmedabad is the premier institution for space science research in the country. It is an autonomous institution of DOS. PRL has set up an Infra Red Telescope facility at Guru-sikhar near Mt, Abu and operates the Udaipur Solar Observatory (USO) having solar. spatial resolution telescope facility.

11. Other Centres carrying out space science research particularly relating to investigations of middle & upper atmosphere, magnetosphere, planetary physics, high energy astronomy inr'ude the Space Physics Laboratory **(SPL)** VSSC at Thumba, Technical Physics Group, ISAC at Bangalore, Tata Institute of Fundamental Research (TIFR). Bombay, Radio Science Division (RSD) at National Physical Laboratory (NPL) New Delhi, Centre for Earth Science Studis (CESS), Trivandrum, Andhra, Banaras, Calcutta, Delhi, Gujarat. Poona, Kerala and Udaipur Universities.

The observational phase of the Indian Middle Atmosphere Programme (IMAP) has recently been completed (1982—89) in which a large number of Government! Agencies, institutions, universities have participated.

SHRl KAMAL MORARKA; I would like to know from the hon. Minister... *(Interruptions)* My question relates to space science. *(Interruptions)* I would like to know: What i_s the failure rati of satellites? I would like to know whether any new centres have been set up for research whereby the railure rate oi satellites can be brought down.

{Interruptions)

श्री सभापति : देश**इस को माफ नहीं करेगा.. (व्यवधान) मेरा समय काट दो ... (व्यवधान) इसको आप रिकार्ड में लाइए देश इस **को माफ नहीं करेगा .. (व्यवधान)

...SHRI KAMAL MORARKA; My second supplementary to the Minister is, what is the cost of the project at Tirupati? You hav_e said that it will be completed by the year 1991. What is the cost of the proejet?

(Interruptions)

SHRl M. A. BABY; Our country has been making so much of achievement in space research. At the same time, advanced countries have been sending individuals into space. Will the Government consider sending some of the Members of this House into space so that the proceedings of this House could go on smoothly?: would like the Central Government to consider this, *(Interruptions)*.

MR. CHAIRMAN; Question No 287 *(Interruptions)*.

*287 *[For answer* vide *col.* 17-1 nfra]

MR. CHAIRMAN; Question No 288 *(Interruptions)*.

*288 *[For answer vide col.* 18- -20.. infra].

MR. CHAIRMAN; Question No. 289 *(Interruptions)*.

*28 *[For answer vide col* . 18—219 infra]

MR. CHAIRMAN; Question No. 290. infra.]

**Removed as ordered by the Chair.

Fire tender with the Delhi Cantonment Board

*290. SHRI JAGDISH PRASAD MA-i THUR; Will the PRIME MINISTER be pleased to state:

(a) whether it is a fact that there is only one obsolete fire tender with, the Delhi Cantonment Board;(b) whether Government propose to in-, ' crease the number of fire tenders for this I defence area on the most modern lines due to recent rise in the number of fire incidents in the capital; and

(c) if so, the details thereof and by when the scheme i_s likely to be imple mented?

THE MINISTER OF STATE IN THE MINISTRY OF DEFENCE (DR. RAJA ! RAMANNA); (a) to (c) The Cantonment Board, Delhi has one fire tender in sound working order. This is considered adequate as the local Army establishments have their own fire fighting arrangements which can be mobilised as per requirement. Beside;, the support of Delhi Fire Services is also available, when required.

SHRI JAGDISH PRASAD MATHUR: May I know.. *(Interruptions)*..

DR. RAJA RAMANNA; The Caaton-ment Board..... *(Interruptions).*

MR. CHAIRMAN; Question No. 291. *(Interruptions)*

291. *For answer* vide *col.* 21-22. • infra].

MR. CHAIRMAN; Question No. 292.

*292. *[For answer* vide col_m 23 infra]. *(Interruptions)*

MR. CHAIRMAN; Question No. 293.

(Interruptions)

*293. *[For answer* vide *col.* 23 *and* 24.. infra]..

MR. CHAIRMAN; Question No. 294. *(Interruptions)*